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For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: TIACUMICIN PRODUCTION

(57) Abstract: Methods, processes and materials for the production and recovery of Tiacumicins produced by culturing a microor-  
ganism belonging to the species *Dactylosporangium aurantiacum* subspecies *hamdenensis* having the ability to produce and accu-  
mulate one or more Tiacumicin in a nutrient medium comprising a carbon source, a nitrogen source, trace elements such as inorganic  
salts, and an adsorbent, wherein said nitrogen source comprises fish powder, and wherein said Tiacumicin is produced in a yield  
greater than about 50 mg/L broth.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/21977

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12P 17/18; A61K 31/70

US CL : 435/117, 118, 119; 536/7.1; 536/16.8, 549/346

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/117, 118, 119; 536/7.1; 536/16.8, 549/346

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,918,174 (MCALPINE et al.) 17 April 1990 (17.04.1990), see Example 1.	1-16
Y	DEMAIN et al. "Manual of Industrial Microbiology and Biotechnology", American Society for Microbiology, Washington, D.C., 1986, pages 123-126. See entire document.	1-16

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "B" earlier application or patent published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "E" document member of the same patent family

Date of the actual completion of the international search

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**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US03/21977

**Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)**This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-16

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

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**INTERNATIONAL SEARCH REPORT**

PCT/US03/21977

**BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING**

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-16, drawn to a process of producing tiacumicins.

Group II, claim(s) 17-25, drawn to a nutrient medium.

Group III, claim(s) 26, drawn to tiacumicins.

The inventions listed as groups I-III do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2 they lack the same or corresponding special technical features for the following reasons:

First, the inventions do not match a permitted category as PCT Rule 13.2 does not provide for multiple methods or products in one category.

Second, the products of group II do not share a special technical feature with the products of claims III. For example, the nutrient medium and the chemical compounds do not correspond in special technical feature, since the nutrient medium may be used to culture other, unrelated, microorganisms.

No common inventive concept is shared among groups I-III, since a technical relationship is lacking among the claimed inventions involving one or more special technical features because tiacumicins are known in the art (See, e.g., U.S. Patent No. 4918174). The requirement of unity of invention is not fulfilled because there is no technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" means those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

**Continuation of B. FIELDS SEARCHED Item 3:**

WEST, CAS online, Medline, Biosis, WPIDS

Search terms: tiacumicin, ferment?, medi?, nutrient?, dactylosporangium

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